## Remarks

In response to the Office Action mailed on September 9, 2005 Applicants offer the following remarks. Further consideration of the application is respectfully requested.

Claim objections and rejections:

Claim 2 is objected to because of a typographical error.

Claim 2 is rejected under 35 USC 112 as being indefinite for the use of the term "substantially."

Claim 1 stands rejected under 35 USC 102(a) as being anticipated by Davis (US Pub. No. 20040062401).

Claims 1 - 21 stand rejected under 35 USC 102(b) as being anticipated by Nakano et al. (US 5,404,315).

Objections

Claim 2 has been amended to correct the typographical error.

Rejections

Claim 2 has been amended to remove "substantially" as requested by the Examiner. While Applicants disagree with the Examiner's assessment, the language of claim 2 retains the desired flexibility even with the deletion of this word.

Applicants submit that the claims are allowable as follows.

Claim 1 has been amended to specify more clearly nature of the time varying gain and the statistical distribution of levels encountered in the audio track. More particularly, claim 1 has been amended to specify that the time varying gain is "varies with time within the audio track."

Davis describes a multichannel audio decoder making use of "metadata, such as a dialog normalization value, to adjust the decoder gain". However, a dialog normalization value does not describe a statistical distribution of levels, it is only a reference level set by a content creator.

Davis also describes applying "an expansion function based on signal level and/or dynamics." While that would indeed include the use of a gain, that gain is derived from instantaneous signal levels or dynamics, not from metadata describing a statistical distribution of levels encountered an audio segment (or audio track).

Nakano describes an automatic gain control device where a gain adjustment is applied to an audio segment (or track) based on an estimate of the average recorded amplitude level of this segment. That is, within the analyzed audio segment (or track), the gain is constant and does not vary with time within the audio segment (or track) as required by claim 1.

Furthermore, while Nakano's amplitude level is estimated by constructing a histogram of amplitudes over that audio segment, the histogram is only used to identify and discard the lowest levels. Once the lowest levels have been discarded, an ***average*** level is determined for that audio segment. This ***average*** value is used to derive a static gain. However, as is well known in statistics, an average is not representative of a statistical distribution. For example, a few high valued samples can distort the value of the average as a representation of the characteristics of the set of samples. As defined in Claim 1, the time-varying gain is not merely derived from an average level for an audio segment (or track): the time varying gain is derived from a statistical distribution of levels.

Accordingly, since neither Davis nor Nakano teach deriving a set of metadata describing a statistical distribution of levels encountered in the audio track and deriving, from the metadata, a time-varying gain that varies with time within the audio track to modify the statistical distribution of levels, it is submitted that Claim 1 is allowable.

Claims 2 to 13 are thus allowable as being dependent on an allowable base claim. However, it should be noted that for claim 2 Nakano does not specify a desired statistical distribution for the resulting signal as required in Claim 2, but only computes an observed distribution in the input signal. For claim 3, Nakano discloses a method of determining a gain – Nakano definitely does not determine an initial estimate of the gain and the loudness resulting therefrom, from which to derive a correction factor for the initial estimate of the gain.

For claims 4-13, all of these claims relate to the derivation or specification of a dynamic spread (a range of levels) over an audio segment or track. Nakano is only concerned with estimating or specifying an average level for an audio segment and not a range of levels.

For claims 14-16, Nakano (columns 4-5) does not actually derive a plurality of weighted loudness values for a plurality of audio frames in an audio segment or track and aggregate these weighted values to derive an overall loudness value. In contrast, Nakano merely obtains instantaneous signal amplitude values (using a non-linear conversion law) and then derives an average signal amplitude value from these instantaneous values.

In Claim 17, a histogram of loudness values is considered, where each loudness value is derived by averaging signal power over a short signal frame. In contrast, Nakano (columns 7-8) describes a histogram of instantaneous signal amplitudes.

In claims 18 and 19, Nakano does not obtain original statistical frequency data for the audio track and then derive test statistical frequency data by applying a test compression scheme. Nakano also does not derive an actual compression scheme from the original data and test data. Nakano merely derives a gain from a modified average, and then applies the gain.

For claims 20 and 21, Nakano does not apply a compression scheme to the statistical frequency data to obtain an estimate of the statistical frequency data that would result from applying the compression scheme directly to the audio track. Nakano merely determines a gain from an average value, and then applies this gain directly to the signal values themselves. Furthermore, Nakano does not determine an estimated overall compressed loudness value, nor apply a gain to the compressed audio track based on a comparison between the estimated overall loudness value and a desired loudness value.

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For the reasons set forth above, Applicants submit that this application is in condition for allowance and respectfully request that an early Notice of Allowance be issued in this case. If there are any queries, please contact the undersigned

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Respectfully submitted,

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